

Ion Chamber Readout System

PROVISIONAL

The QD Ion Chamber Readout System provides a low noise, low cost ion chamber readout with Ethernet or USB interfaces. The Ion Chamber readout system has been designed to provide a compact, low cost, high resolution and low noise charge measurement system that is easily interfaced to the majority of commercial ion chambers. While designed initially for the use with the Quantum Detectors range of Ion Chambers it is equally applicable to any other application requiring low level charge measurement.

Key features of the system are the two input channels, each programmable for full scale charge of between 50pC and 350pC and offering typical noise levels of 1fC. All configuration and data readout is performed over an industry standard filtered Ethernet or USB port minimising connections. Optical isolation is included to further limit the potential for ground loops and noise injection.

Benefits

- Low Cost
- Real time error estimation
- Conveniently built into ion chamber housing

Features

Number of Charge Input Channels	2
Full Scale Charge	50pC to 350pC (in 50pC steps)
Noise Level	2fC rms (on 250pC range)
ADC Resolution	20 Bit
Acquisition Speed	3,000 conversions per second (total)
Minimum Integration Time	50us
Software	Comprehensive Flexible Windows [®] Interface/Drivers
Auxiliary Inputs	2 optical, 2 digital (typically used for time frame control)
Data Output	10/100 Ethernet / USB 2.0
Power	+6V to +12V @ 500mA
Dimensions	150mm x 100mm x 50mm (excluding PSU and connectors)
Weight	0.5kg (excluding PSU)

Also provided on the unit are:

- Internal time frame generator (can be synchronised to external time base).
- Automatic over-sampling and accumulation on longer timeframes.
- On board memory for accumulated charge, up to 8192 frames.
- Internal HV supply to bias the Ion Chamber (under development)

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